

REMARKS

By the above amendment, Applicant has rewritten all claims to define the invention more particularly and distinctly so as to overcome the technical rejections and define the invention patentably over the prior art.

The Rejection of Claim 1 is Overcome

The last Office Action rejected independent claim 1 based on Greenbowe. Claim 1 (now cancelled) has been rewritten as new claim 21 to define patentably over this reference. Applicant requests reconsideration of this rejection.

In-Context Description

Regarding a code segment for presenting an in-context description of each outcome entity and the method used to compute said outcome entity's value, the Office Action indicated that, although the in-context description is described in the specification, the language in step 1.c of claim 1 does not define it enough.

The language in step 21.c of the new claim 21 provides more detailed definition of the mechanism of the in-context description, in a way that more clearly distinguishes its novelty over Greenbowe. Greenbowe in Col 4 lines 37-54 describes that their system can produce a picture of an experimental lab configuration, using an application model that encompasses shapes of objects, appearance attributes of objects, sounds of objects, and relationships among objects. However, Greenbowe's system does not allow the user to choose any simulation-model outcome entity for a description or the method used to compute the outcome entity's value. It is not apparent anywhere in Greenbowe that descriptions of all outcome entities are provided within their system, let alone a way for users to access them in the context of the simulation through interface controls or

clickable objects at the locations where the outcome entities are referenced or represented. Lack of this feature in a simulation like Greenbowe's would make it difficult for a learner to understand how the simulated system works; furthermore, for simulated systems more complex than a controlled laboratory environment, lack of such a feature would be even more adverse.

Note that the mechanism for obtaining the in-context descriptions is described in section 8 of the specification, including page 22 lines 30-34 and page 23 lines 7-15. As described, descriptions are in some contexts obtained by right-clicking on a quantity's graph line, and in others by clicking on a text-based hyperlink. Anyone skilled in the art would recognize that the user's request could be detected using any of a variety of user-interface controls, such as buttons, menus, mouse-overs, icons, clickable images, and so forth. The exact type of interface control or clickable object employed is not the issue; rather, what is important is that there needs to be a means for the user to signal their interest right within the context where the quantity is referenced or represented.

Automated Agents

Regarding a means for a learner to control a selected instrument entity, wherein each instrument entity excluded from learner control is controlled by a selected automated agent, the Office Action indicated that although the automated agent is described in the specification, the language in step 1.e of claim 1 does not define it enough.

The language in step 21.e of the new claim 21 provides more detailed definition of what is meant by an "automated agent", in a way that more clearly distinguishes its novelty over Greenbowe.

Page 12, line 30 to page 13, line 2 of the application explains that an automated agent algorithm dynamically tests the state of the system at each time period, meaning that it uses the values of certain quantities, to dynamically determine what value to assign to its instrument entity in the next time period. This is a much more sophisticated approach

than an approach where a constant numeric value is selected for an input by the user at the beginning of the simulation. With an algorithmic procedure, selected values can be dynamically manipulated during the simulation in ways that help maximize learning impact, by reducing the cognitive load on the student, or by nudging the simulation into more pedagogically “interesting” states, or etc. This is especially critical for complex simulations, where learners are in particular danger of being overwhelmed with complexity. Automated agents help keep students from getting “bogged down” during the simulation run.

Qualitative Descriptions of State Changes

Regarding a code segment for presenting qualitative descriptions of one or more state changes in the simulation, the Office Action noted that step 1.d of claim 1 is not directed to a solely automatic process. The Office Action also states that the feature of automatically formulating and selecting based on specific occurrences in a simulation is not claimed.

The language in step 21.d of the new claim 21 explicitly states that the process is automatic. Regarding the issue whether it is claimed that the qualitative descriptions are based on specific occurrences in a simulation, Applicant believes that this is implicitly contained in the original claim, but acknowledges that there is some potential ambiguity. The original claim indicates that descriptions of state changes are presented; since state changes only occur dynamically during a particular run of the simulation, such descriptions could not be generated except based on event or occurrences in a specific run. Nevertheless, language has now been added to the claim to eliminate this potential ambiguity.

Note that the specification confirms that this process is fully automated through the provision of specialized program code, as discussed on page 25 lines 4-26. No new matter has been added.

The Rejection of Claim 6 is Overcome

The last Office Action rejected dependent claim 6 based on Greenbowe. Claim 6 has been combined with claim 7 and with claim 9, respectively, and rewritten as new claims 26 and 28, respectively, to define patentably over this reference. Applicant requests reconsideration of this rejection.

The Office Action noted that Greenbowe teaches a simulation model—or in Greenbowe's terminology, an experimental configuration—that is associated with a plurality of different problem scenarios. However, nowhere does Greenbowe mention the idea of allowing the learner to control different inputs for two different executions based on the same experimental configuration. Similarly, nowhere does Greenbowe mention the idea of allowing a designer to create two different scenarios based on the same experimental configuration, wherein different automated agents control the instrument quantities in the respective scenarios. It is clear that this is not even possible in Greenbowe, because Greenbowe's system does not have the concept of applying automated agents to dynamically control instrument quantities.

Therefore, combining claim 6 with claim 7 into one new claim ensures that the feature is novel with respect to Greenbowe. Similarly, combining claim 6 with claim 8 into another new claim ensures that the feature is also novel with respect to Greenbowe.

The Rejection of Claim 10 is Overcome

The last Office Action rejected dependent claim 10 based on Greenbowe. Claim 10 has been rewritten as new claim 29 to define patentably over this reference. Applicant requests reconsideration of this rejection.

The Office Action noted that in Greenbowe a student can select a particular experiment to perform. However, the development environment of claim 10 refers to a tool that a designer, rather than a student, would use to develop new simulation models, automated

agents, and other components of a simulation. The tool is used to develop these components “from scratch” rather than by selecting from a list of pre-defined components or configurations.

Greenbowe makes no mention of any such development tool. This does not of course mean that Greenbowe’s system is impossible to build, nor that it was not built; a system such as Greenbowe’s could be built using a standard programming environment.

However, as discussed in page 16 line 25 through page 17 line 17 of the application, the specialized development tool in the present invention enables development of more complex simulations than has been previously possible, due to the gains it affords in development efficiency and manageability.

Conclusion

For all of the above reasons, Applicant submits that the claims are now in proper form, and that the claims all define patentably over the prior art. In addition, Applicant affirms that no new matter beyond the original specification has been added. Therefore Applicant submits that this application is now in condition for allowance, which action is respectfully solicited.

Conditional Request for Constructive Assistance

Applicant has amended the claims of this application so that they are proper, definite, and define novel structure which is also unobvious. If, for any reason this application is not believed to be in full condition for allowance, Applicant respectfully requests the constructive assistance and suggestions of the Examiner in order that the undersigned can place this application in allowable condition as soon as possible and without the need for further proceedings.

Very respectfully,



David A. Foster

Applicant Pro Se

2119 W. Potomac Ave. #2
Chicago, IL 60622
Tel. (847) 778-7895; Fax (773) 252-5899

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David A. Foster, Applicant